

**RTCA Paper No. 109-06/SC209-004**  
**Minutes of Meeting #02 of RTCA SC-209**  
**For The Maintenance of the ATCRBS & Mode-S MOPS**  
<http://adsb.tc.faa.gov/SC209.htm>

The meeting was called to order by Co-Chair Thomas Pagano of the FAA Technical Center at 9:00am EST, 23 May 2006, at the facilities of L-3 Communications / The Titan Group in Mays Landing NJ. Mr. Pagano indicated that Co-Chair Robert Saffell of Rockwell Collins would not be attending this meeting because of company business in Europe and Japan. Mr. Pagano then welcomed all attendees and asked that each attendee introduce themselves and their organization. The attendees for all or part of the meeting included:

2 <sup>nd</sup> Lt. Joe Adelmann, USAF, Hanscom AFB	Andrew Leone, FAA Tech Center
Mark Annee, U.S. Navy	Peter Markus, FAA/ATO/AJW
Ray Bayh, BAE Systems	Peter Muraca, FAA Tech Center
John Berglund, U.S. Navy	Tom Pagano, FAA Tech Center – AJP-1800
Bob Clarke, Alion Science	Boris Stallings, NAVAIR (US Navy)
Rob Duffer, FAA, AIR-130	Bill Thedford, Consultant, U.S. Air Force
John Fisher, Consultant, U.S. Air Force	John Van Dongen, FAA TC – AJP-1800
Gary Furr, L-3/Titan, FAATC–AJP-1800	Leo Wapelhorst, L-3/Titan, FAATC-AJP-1800
Doug Guetter, L-3 / ACSS	

1. With the proposed Agenda displayed, Tom Pagano asked if there were any suggested additions or changes to the Agenda. There were no suggested changes, so Mr. Pagano began to progress on the Agenda as published. Mr Pagano offered a welcome to those attending and Mr. Furr offered some information about the surrounding area and the facilities available from L-3/Titan.
2. Tom Pagano then asked that we review and approve the minutes of Meeting #1. As the meeting progressed through the Minutes of Meeting #1, a question was asked as to the status of Action Item 1-2 that was assigned to Rob Duffer. Rob indicated that he has contacted ARINC and that Paul Prisaznuk would be the point of contact for SC-209 issues and that Paul will be attending future meetings of SC-209. Tom Pagano indicated that for Action Item 1-3 he had spoken to Stuart Searight briefly regarding the coordination of SC-209 with SC-147 on matters related to TCAS, and that further conversations would take place. Stuart Searight has been invited to attend future SC-209 meetings. Regarding Action Item 1-4, Rob Duffer indicated that he had talked to Terry Persall and that Terry had agreed to attend future SC-209 meetings. Following these discussions on Action Items, the Minutes of Meeting #1 were approved by the Committee.
3. Tom Pagano indicated that the next SC-209 meeting would be held at RTCA in Washington DC on 8 and 9 August 2006. Bill Thedford indicated that the next Eurocae WG-49 meeting is now scheduled to start on 4 July 2006 in Paris, with another meeting probably scheduled in the October timeframe, but no dates have yet been set. Since we had begun to discuss meeting dates, and with the 2006 calendar displayed, the Committee began to set the dates for future meetings. The following dates were approved, even though the meeting locations were not completely specifically set.

Meeting	Dates/Time	Meeting Location
#3	8 – 9 August 2006 9:00am – 5:00pm EDT	RTCA, Washington DC
#4	18 – 19 October 2006 9:00am – 5:00pm EDT	TBD
#5	5 – 6 December 2006 9:00am – 5:00pm EST	RTCA, Washington DC – on condition that SC-186 would hold a Plenary on 12/7/06

4. Tom Pagano then began to give a brief summary of the status of the process that has led to the development of the STP MOPS under WG-4 of RTCA SC-186. Tom indicated that the draft STP MOPS has been released to SC-186 members for a final review and comment (FRAC) period ending with the SC-186 Plenary review of the document on 16 June 2006. Tom also gave a brief discussion of the changes that have been proposed as an officially published “Change 1 to DO-260A.” These changes have been reviewed and approved by SC-186 WG-3 and are currently in draft form for review by the RTCA PMC prior to publishing after their meeting on 27 June 2006. Tom further discussed the activities of the FAA Surveillance and Broadcast Services Specification Team, which will result in performance specifications being written for critical and essential services for ground stations in the NAS, being released for requests for offers near the end of 2006 or early Q1 2007. Tom also indicated that there has been a restructuring and renaming of the ICAO Surveillance and Conflict Resolution Systems Panel (SCRSP) to form the Aeronautical Surveillance Panel (ASP). The new structure of ASP includes a working group for ground activities and a working group for airborne activities. At a recent ASP meeting in Montreal, further work has been progressed on a new Technical Manual for 1090 MHz Extended Squitter, which removes a large amount of the definitions of message formats from the previously published 1090 SARPs and places them into a separate Technical Provisions Manual along with some of the guidance materials that were previously in Doc 9688. Both the 1090 SARPs and the Technical Manual are expected to become effective in November 2007.
5. The Committee then began the review of Working Paper SC-209-WP02-05 as presented by John Van Dongen of the FAA Technical Center. John indicated that over the last several years of his testing at the FAA Technical Center, that he had compiled a list of problems that he believed that had been found in the transponder MOPS. The list of issues expressed in Working Paper SC-209-WP02-05 is the initial presentation of these problems and John’s proposed resolution(s). As the review of this working paper progressed, the Committee agreed upon several points. First, Action Item 2-1 was accepted by Doug Guetter to talk to the hardware people at ACSS with respect to DO-181C, Figure 2-24 to find out what they do related to the power measurement point. It was also agreed that Figure 2-24 needed to be clarified with a note regarding the fact that measurements are to be taken at the antenna end.

Next, it was agreed that Gary would edit Working Paper WP02-05 during the discussions and indicate the agreed upon resolutions and post the revised working paper to the SC-209 web site after the meeting. Those problems that are identified in this working paper that have their proposed resolution agreed to by the Committee, will be edited by Gary into the working draft of DO-181D and rather than using the “Track Changes” feature of Microsoft WORD, edited text will be highlighted in yellow, whereas text that has been moved from one section to another because of agreed upon modifications or reorganizations, will be highlighted in gray. Gary will begin a table similar to the one that he maintained during the updating of DO-260 to DO-260A showing all sections of the document and where they are in the new version of the document.

Action Item 2-2 was accepted by Doug Guetter and assigned also to Bob Saffell to resolve the differences in the “Reply Rate” requirements in the following sections: (1) DO-181C, §2.2.3.4.1, (2) ED-73B, §3.4.1, (3) SARPs Annex 10, Vol-IV, §3.1.1.7.9.

John indicated that in Step 3 of test procedures in §2.3.2.6 and §2.4.2.6, there are references to §2.2.7.2.2, which is listed in DO-181C as “not used.” John suggested deleting these test procedures since they reference a requirement that has been removed. Prior to making a decision on this topic, the Committee asked Gary to create an email to Dr. Vince Orlando to ask the reason behind the deletion of the requirement in §2.2.7.2.2 between documents DO-181A and DO-181B. On 24 May, a reply from Dr. Orlando came back indicating that the working group that made revisions leading to DO-181B had agreed that the requirement in §2.2.7.2.1 covered the requirement that was originally in §2.2.7.2.2, and the latter was then deleted. The Committee agreed not to delete the two test procedures that John had referenced, but rather to change the references that were indicated to point to §2.2.7.2.1.

In WP02-05, John points out that in §2.2.8.4 the required response to TACAN/DME and JTIDS interference is defined over a range of signal levels between -68 and -21 dBm. John points out that the test procedure in §2.4.2.7 only uses -50 dBm for the Mode-S interrogation and that it should be updated/expanded to include the defined range. After a discussion, the Committee agreed to assign Action Item 2-3 to Gary Fur and to all manufacturers to review the proposed changes identified by John in WP02-05R1 and respond as to the impact that any change might have on their testing programs.

6. Pete Muraca began the review of Working Paper SC-209-WP02-03, which was a presentation related to the status of the progress of a group led by Pete to transform the contents of DO-218 into an Appendix to be included with DO-181D. It was agreed by the Committee that Pete and his group had made significant progress and that he should continue with his work and report again at the SC-209 Meeting in August at RTCA. Bill Thedford accepted Action Item 2-4 to develop a briefing to be given to WG-49 related to the progress in developing Appendix B, as well as several other topics. Pete Muraca and his team accepted Action Item 2-5 to continue the development of Appendix B and make the next draft available to the Committee by 17 July so that there could be a productive review during the SC-209 meeting in August.
7. Bill Thedford then began the review of the status of his effort to map the requirements between DO-181C and ED-73B. He indicated that the effort has slowed because of his availability but that progress was being made. Bill further pointed out that ED-73B includes the modification that is known as the “hijack mode” and that the current draft of DO-181D does not include those changes. Bill believes that Eurocae does not intend to remove the changes that were inserted for this change when ED-73C is produced. It therefore is important that SC-209 discuss this issue in depth to come to some understanding as to how to proceed with primary emphasis on not doing anything that would preclude a joint TSO in the future. Bill mentioned that there were several action items that were assigned by WG-49 to himself and/or SC-209. After discussion, it was agreed by the Committee that Bill would take the resolution of these action items back to WG-49 and discuss them at their July meeting, in conjunction with SC-209 Action Item 2-4.
8. It was agreed by the Committee that these action items from WG-49 should be discussed individually and a detailed reply should be made to each. With the Minutes of WG-49 Meeting #6 displayed, Tom Pagano led the discussion of each action item assigned to SC-209 by WG-49. The resolutions of the discussions are as follows:

<b>WG-49 Action</b>	<b>SC-209 Response</b>
A6/01	With regard to the issue of “Pulse Width,” SC-209 agrees that DO-181C does not agree with ED-73B, nor the SARPs, as discussed in a paper provided by Tom Pagano (WG49N6-06). SC-209 will review the requirements. The manufacturers have also agreed to review these requirements. Rob Duffer will also speak to Kevin at EASA on the topic.
A6/02	DO-150 was replaced by the initial DO-181, therefore, any references to DO-150 should be updated to refer to DO-181. SC-209 has decided to update and reissue DO-144 as DO-144A.
A6/03	The SC-209 web site is up and available to all and located at: <a href="http://adsb.tc.faa.gov/SC209.htm">http://adsb.tc.faa.gov/SC209.htm</a>
A6/09	SC-209 cannot see anything bad in §2.2.14.1. Perhaps the reference is incorrect, but if not, then further information is required from WG-49 on their issue.
A6/10	SC-209 agrees to review the On-Ground and the Validation requirements in DO-181C and will ensure that these requirements are consistent with those identified in DO-260A, DO-282A, DO-289, the 1090ES SARPs and the UAT SARPs, all of which are currently believed to be in agreement.
A6/23	SC-209 agrees to review the “Reply Rate” issue and has initially assigned Action Item 2-2 to the manufacturers for review at Meeting #3 in August.

9. Ray Bayh began the review of Working Paper SC-209-WP02-06, which he had prepared to show the proposed reorganization of several sections in DO-181C, section 2.2. After discussion, the Committee agreed to the proposed changes and further agreed to allow Gary to make the proposed changes in the next draft of DO-181D which would be available prior to Meeting #3 in August. Gary pointed out that there are several interim steps that must be performed to the draft DO-181D document prior to initiating the reorganization of the sections. Gary will (1) first go through the entire document and automate all section references, (2) will move all of the Figures 2-4 through 2-32 to ensure that the figures occur in the document at the point closest to their initial reference, (3) apply all of the agreed-upon changes in Working Paper WP02-05R1, and (4) apply all of the reorganization steps that are identified in Working Paper WP02-06. Gary will make a best-effort to accomplish this task by the second or third week in June in order that Bill Thedford could prepare to take that version of the draft DO-181D to the WG-49 meeting that starts on 4 July in Paris. That draft of DO-181D will also serve as the starting point for any future reorganization proposals from Ray Bayh and the group led by Bob Saffell.
10. The summary of Action Items that remained open, or were newly assigned and accepted during Meeting #2 are as follows:

<b>Action Number</b>	<b>Open Action Item Descriptions</b>	<b>Assigned to</b>	<b>Status</b>
1-3	Coordinate with Stuart Searight to make sure that all of the TCAS issues are accounted for.	Tom Pagano Gary Furr	Ongoing
2-1	Doug will talk to his hardware people to see what they are doing with respect to a discussion related to the power measurement point. Relates to DO-181C, Figure 2-24.	Doug Guetter	
2-2	Resolve the differences in the “Reply Rate” requirements in the following sections: (1) DO-181C, §2.2.3.4.1, (2) ED-73B, §3.4.1, (3) SARPs Annex 10, Vol-IV, §3.1.1.7.9	Doug Guetter Bob Saffell	

Action Number	Open Action Item Descriptions	Assigned to	Status
2-3	Prepare and distribute to the manufacturers a summary of the changes described in WP-02-05 for TACAN/DME in §2.4.2.7 for their evaluation of what impact they might have on their hardware testing.	Gary Furr Manufacturers	
2-4	Prepare a briefing(s) to give to EUROCAE WG-49 related to: (1) the status of the development of Appendix B in DO-181D on Mode S Specific Services, (2) SC-209 response to Action Items from WG-49 Meeting #6, (3) status of DO-181D section re-ordering and test procedure revisions.	Bill Thedford Bob Saffell	
2-5	Complete the next draft of Appendix B - Mode S Specific Services and make it available during the week of 17 July 2006 for formal review and comment at the SC-209 meeting in August.	Pete Muraca Andy Leone John Fisher	
2-6	Further the restructuring section 2.2 of DO-181 for Meeting #3	Bayh, Saffell, Annee, Guetter	
2-7	Review the P4 “must accept” / “must reject” criteria.	Guetter, Bayh, Saffell, Garmin, Honeywell, Clarke	

11. The **Working Papers** for all SC-209 Meetings, as well as the Meeting Agendas, Meeting Minutes, Meeting Schedules and proposed modifications to the ATCRBS and Mode-S MOPS will be posted on the web site maintained by Gary Furr at the FAA William J Hughes Technical Center, located at:  
<http://adsb.tc.faa.gov/SC209.htm>

As reported in the Meeting Summary of Eurocae WG-49, Meeting #6, members of SC-209 may access the WG-49 workspace through the Eurocae web site located at:  
<http://www.eurocae.org/> Login: WG49 and password: MODE-S

Also, the workspace of Eurocae WG-51 can be accessed by SC-209 members through the same Eurocae web site with: Login: WG51 and password: ADSB